

Patent claims

1. A heat exchanging apparatus, in particular for a motor vehicle, having at least one first
5 collecting and/or distributing device for at least one liquid medium, the collecting and/or distributing device being fluidically connected to a plurality of throughflow devices through which the medium flows at least in sections, and the
10 collecting and/or distributing device having at least one base device, one cover device and one separating device which divides the collecting and/or distributing device into at least two partial spaces, **characterized in that** the base device has at least one projection which protrudes
15 inward with respect to the collecting and/or distributing device from a predefined plane of the base device, and at least one section of the separating device is in at least indirect contact with at least one side face of the projection and
20 with at least one section of the plane of the base device.
2. The apparatus as claimed in claim 1, **characterized in that** the inwardly protruding projection has at
25 least one side face which forms a substantially right angle with the plane of the base device, and the separating device is arranged at said right angle.
3. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that**
30 a plurality of inwardly protruding projections are provided.
4. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that**
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the plurality of inwardly protruding projections are arranged substantially in a straight line.

- 5 5. The apparatus as claimed in claim 4, **characterized in that** those side faces of the projections which are in contact with the separating device are arranged substantially in a plane.
- 10 6. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** the plane in which the side faces of the projections are arranged are aligned substantially perpendicular to the plane of the base device.
- 15 7. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** the plurality of projections are arranged so as to be alternately laterally offset relative to one another with respect to a transverse direction of
20 the collecting and/or distributing device.
8. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** the side faces of those projections which are
25 alternately laterally offset relative to one another and are in contact with the separating device are situated obliquely opposite one another at a predefined angle.
- 30 9. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** the separating device is arranged between the projections which are arranged offset relative to one another in each case.
- 35 10. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that**

the separating device has a thickness of from 0.2 mm - 5 mm, preferably of between 0.4 mm and 2 mm and particularly of from 0.8 mm - 1.2 mm.

- 5 11. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** the inwardly protruding projections have a surface which runs substantially parallel to the plane of the base device.
- 10 12. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** the inwardly protruding projections have a face which runs substantially obliquely with respect to
- 15 the plane of the base device at a predefined angle.
13. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that**
- 20 the inwardly protruding projections have a height of between 0.2 mm and 5 mm, preferably of between 0.4 mm and 2 mm and particularly preferably of between 0.8 mm and 1.2 mm.
- 25 14. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** the inwardly protruding sections extend substantially continuously in the longitudinal direction of the base device.
- 30 15. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** the separating device is in at least indirect contact with at least one side face of all the
- 35 inwardly protruding sections.
16. The apparatus as claimed in particular in at least

one of the preceding claims, **characterized in that** a connecting medium is provided in a contact region between the base device and the separating device.

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17. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** the connecting medium is selected from a group of connecting media which includes solders, flux and the like.

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18. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** the separating device is embodied as a separating wall.

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19. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** the base device has a plurality of passage openings.

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20. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** the plurality of passage openings have a substantially slotted-hole-like profile.

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21. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** the passage openings have flanges through which the throughflow devices are inserted.

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22. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** the flanges point inward with respect to the collecting and/or distributing device.

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23. The apparatus as claimed in particular in at least

one of the preceding claims, **characterized in that** the ends of the flanges are arranged at a level which differs from the plane of the base device.

- 5 24. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** the plane of the base device is arranged higher than the level of the ends of the flanges.
- 10 25. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** the plane defined by the separating device substantially represents a plane of symmetry of the base device.
- 15 26. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** the length of the base device exceeds the length of the separating device.
- 20 27. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** a plurality of throughflow devices of substantially flat-tube-like cross section are inserted into the plurality of passage openings.
- 25 28. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** that side face of the inwardly protruding projections which is in contact with the separating device is larger than that section of the base device which is in contact with the separating device.
- 30 29. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** that section of the base device which is in
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contact with the separating device is wider than the thickness of the separating device.

- 5 30. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** a plurality of support devices are provided which project relative to a base face of the base device.
- 10 31. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** the support devices are arranged substantially between the passage openings.
- 15 32. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** at least some of the support devices merge into the projections.
- 20 33. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** the base device has a projecting peripheral edge.
- 25 34. The apparatus as claimed in particular in at least one of the preceding claims, **characterized in that** the base device has at least one lug, preferably a plurality of lugs, at its periphery.
- 30 35. The apparatus as claimed in one of claims 20 to 34, **characterized in that** the separating device runs parallel to the passage openings.
- 35 36. The apparatus as claimed in claim 35, **characterized in that** the separating device is arranged in a holding section which has guide faces.

37. A method for producing a heat exchanging apparatus having the following method steps:
- 5 - producing a base device having at least one projection;
 - 10 - applying at least one connecting medium to at least one side face of the projection, and to at least one section, which adjoins the side face of the projection, of the base device;
 - 15 - arranging the separating device on the base device, the separating device being in at least indirect contact with the base device and the side face of the projection.
38. The method as claimed in claim 37, **characterized in that** at least one inwardly protruding projection is generated by means of a machining operation on the base device, the machining operation being selected from a group of machining operations which includes punching, deep-drawing and the like.
- 25 39. The method as claimed in particular in at least one of the preceding claims, **characterized in that** a plurality of inwardly protruding projections is generated.
- 30 40. The method as claimed in particular in at least one of the preceding claims, **characterized in that** that section of the base device which adjoins the inwardly protruding projection runs substantially in the plane of the base device.
- 35 41. The method as claimed in particular in at least one of the preceding claims, **characterized in that**

at least one support device is generated in the base device.

- 5 42. The method as claimed in particular in at least one of the preceding claims, **characterized in that** at least one support device is generated such that it merges into at least one inwardly protruding projection.
- 10 43. The method as claimed in particular in at least one of the preceding claims, **characterized in that** a plurality of passage openings are punched into the base device.
- 15 44. The method as claimed in particular in at least one of the preceding claims, **characterized in that** one flat-tube-like throughflow device is at least partially inserted into each passage opening, and a positively locking and/or cohesive and/or non-positively locking connection is generated between
20 the base device and each throughflow device.
- 25 45. The method as claimed in particular in at least one of the preceding claims, **characterized in that** a non-positively locking, positively locking and/or cohesive connection between the base device and the plurality of throughflow devices is generated by means of a method selected from a group of methods which includes soldering,
30 brazing, welding and the like, and combinations of said methods.
- 35 46. The method as claimed in particular in at least one of the preceding claims, **characterized in that** the separating device is pressed with a predefined force both against at least one side face of the

projection and also against the section of the base device.

- 5 47. The method as claimed in particular in at least one of the preceding claims, **characterized in that** edges which surround the base device are generated by means of a further method step.